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Docket No.: 500.43094X00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

Yusuke NODA et al.

Serial No. 10/649,748

Filed: August 28, 2003

For: METHODS AND APPARATUS FOR RECOVERING WORK OF
ONE COMPUTER BY ANOTHER COMPUTER

SUPPLEMENTAL PETITION TO MAKE SPECIAL
UNDER 37 CFR \$1.102(MPEP \$708.02)

June 13, 2005

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Supplemental to the Petition to Make Special filed on May 10, 2005,

Applicants submit the following additional remarks.

It is submitted that the cited references, whether considered alone or in combination, fail to disclose or suggest the invention as claimed. In particular, the cited references, at a minimum, fail to disclose or suggest in combination with the other limitations recited in the claims:

a first feature of the present invention as recited in independent claim 1 wherein a disaster recovery method that includes when a failure occurs at said first data center, selecting an information processing apparatus whose necessary recovery time including a time taken to input data still not backed up satisfies a

predetermined requested recovery time, from information processing apparatuses in said second data center;

a second feature of the present invention as recited in independent claim 7 wherein a disaster recovery system that includes an information processing apparatus selecting unit for, when a failure occurs at said first data center, selecting an information processing apparatus whose necessary recovery time including a time taken to input data still not backed up satisfies a predetermined requested recovery time, from information processing apparatuses in said second data center; and

a third feature of the present invention as recited in independent claim 12 wherein a storage medium storing a program for making computers function as an information processing apparatus selecting unit for, when a failure occurs at said first data center, selecting an information processing apparatus whose necessary recovery time including a time taken to input data still not backed up satisfies a predetermined requested recovery time, from information processing apparatuses in said second data center.

To the extent applicable to the present Petition, Applicants submit that although the distinguishing feature(s) may represent a substantial portion of the claimed invention, the claimed invention including said feature(s) and their inter-operation provides a novel storage system and system and method related to or implemented in or by said storage system not taught or suggested by any of the references of record.

The references considered most closely related to the claimed invention are briefly discussed below:

U.S. Patent No. 5,404,508 (Konrad et al.) discloses a system and method for maintaining a backup database, and for providing quick recovery of the backup database in the event that database processing on the primary data base becomes inoperable. The invention entails maintaining a primary database, against which transactions are processed. Information relating to updates to the primary database is saved to intermediate storage in what is logically referred to as the audit trail. A backup database is established at an arbitrary point in time and saved in storage which is separate from that in which the primary database is stored. Part of transaction processing entails receiving transactions, updating the primary database for update type transactions, and saving audit information pertaining to the update transaction to intermediate storage. (See, e.g., Abstract and column 4, line 22, through column 5, line 34.) However, unlike the present invention, Konrad et al. does not disclose that when a failure occurs at a first data center, an information processing apparatus is selected, from information processing apparatuses in a second data center, whose necessary recovery time including a time taken to input data still not backed up satisfies a predetermined requested recovery time. More particularly, Konrad et al. does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 7, and the above described third

feature of the present invention as recited in independent claim 12, in combination with the other limitations recited in each of the independent claims.

U.S. Patent No. 5,596,707 (Ohta) discloses an information processing system including a control table, which discriminates whether or not the data selected from a first external storage unit holding a large amount of data has been introduced in the main storage with reference to that control table. The data which has not been introduced in the main storage is transferred from the first external storage unit to the second external storage unit in certain units of volume via the buffer at the time of a backup operation. The data which has been introduced in the main storage is read out from the main storage and converted to the physical format in the first external storage unit and written in the second external storage unit. At the time of a recovery operation, the data is written from the second external storage unit into the first external storage unit in certain units of volume via the buffer, but when it is discriminated by the control table that the data is data which has been introduced in the main storage, this is also written at the corresponding position in the main storage. (See, e.g., Abstract and column 1, line 58, through column 2, line 18.) However, unlike the present invention, Ohta does not disclose that when a failure occurs at a first data center, an information processing apparatus is selected, from information processing apparatuses in a second data center, whose necessary recovery time including a time taken to input data still not backed up satisfies a predetermined requested recovery time. More particularly, Ohta does not disclose or suggest the above described first feature of the present invention as recited in

independent claim 1, the above described second feature of the present invention as recited in independent claim 7, and the above described third feature of the present invention as recited in independent claim 12, in combination with the other limitations recited in each of the independent claims.

U.S. Patent No. 5,758,359 (Saxon) discloses a method and apparatus for performing computer system backups according to a backup policy made sensitive to adjustable selection criteria. The backup system employs a backup policy to control the backup procedures so that the backups are performed at specific times and at specific backup levels, but the backups are subject to user-defined selection criteria. The selection criteria comprises a maximum size threshold, selected by a user or administrator, so that the amount of data that can be backed up in an allotted backup time. (See, e.g., Abstract and column 2, line 9, through column 3, line 32.) However, unlike the present invention, Saxon does not disclose that when a failure occurs at a first data center, an information processing apparatus is selected, from information processing apparatuses in a second data center, whose necessary recovery time including a time taken to input data still not backed up satisfies a predetermined requested recovery time. More particularly, Saxon does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 7, and the above described third feature of the present invention as recited in independent claim 12, in combination with the other limitations recited in each of the independent claims.

U.S. Patent No. 5,796,934 (Bhanot et al.) discloses a system and a method for providing fault tolerance in a client/server computer system. A client is initially connected to a primary server. The primary server normally handles all of the client's transactions. However, a secondary connection is designated to a backup server, whereby if the primary server ever becomes disabled, the client is automatically switched over to the backup server. In-flight transaction information corresponding to transactions currently being processed by the primary server is stored and regularly updated by the client. The client regularly polls the primary server to check whether the primary server is properly functioning. If the primary server becomes disabled, all in-flight transactions pending on the disabled server are rolled back and the client resubmits in-flight transaction information to the backup server so that it can complete any transactions which were in progress on the primary server at the time of the failure. (See, e.g., Abstract and column 2, lines 38-61.) However, unlike the present invention, Bhanot et al. does not disclose that when a failure occurs at a first data center, an information processing apparatus is selected, from information processing apparatuses in a second data center, whose necessary recovery time including a time taken to input data still not backed up satisfies a predetermined requested recovery time. More particularly, Bhanot et al. does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 7, and the above described

third feature of the present invention as recited in independent claim 12, in combination with the other limitations recited in each of the independent claims.

U.S. Patent No. 5,930,824 (Anglin et al.) discloses a system and method for demand-based data recovery operating in a computerized data processing system that includes a computer platform operable under the control of system data, including system programs, catalogs, directories, inventories and the like, and one or more user applications operable in conjunction with user data. The data processing system includes a data backup and recovery system for periodically transferring data between one or more primary data storage resources and one or more secondary data storage resources. The demand-based system and method operates to recover data from the secondary data storage resources to the primary data storage resources following a disaster event resulting in the loss of all or a portion of the data on the primary data storage resources. (See, e.g., Abstract and column 2, line 28, through column 3, line 7.) However, unlike the present invention, Anglin et al. does not disclose that when a failure occurs at a first data center, an information processing apparatus is selected, from information processing apparatuses in a second data center, whose necessary recovery time including a time taken to input data still not backed up satisfies a predetermined requested recovery time. More particularly, Anglin et al. does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 7, and the above described third feature of the present invention as recited in independent claim

12, in combination with the other limitations recited in each of the independent claims.

U.S. Patent No. 6,247,141 (Holmberg) discloses fault tolerant server systems including redundant servers. The fault-tolerant client-server system comprises a primary server, a backup server and a client. The client sends a request to the primary server. The primary server receives and processes the request, including sending a response to the client, independent of any backup processing being performed by the primary server, where the response includes primary server state information. By sending the response independent of backup processing, a higher level of concurrence is achieved, thereby making the system more efficient. The primary server also performs backup processing, including periodically sending the primary server state information to the backup server. The client receives the response from the primary server, and sends the primary server state information from the client to the backup processor. The act of performing backup processing in the primary server may be performed periodically based on a predetermined time interval. (See, e.g., Abstract and column 2, lines 19-53.) However, unlike the present invention, Holmberg does not disclose that when a failure occurs at a first data center, an information processing apparatus is selected, from information processing apparatuses in a second data center, whose necessary recovery time including a time taken to input data still not backed up satisfies a predetermined requested recovery time. More particularly, Holmberg does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above

described second feature of the present invention as recited in independent claim 7, and the above described third feature of the present invention as recited in independent claim 12, in combination with the other limitations recited in each of the independent claims.

U.S. Patent No. 6,785,786 (Gold et al.) discloses a tape storage apparatus, comprising an interface for connecting the apparatus to one or more clients; a controller for controlling the apparatus and for processing messages received from the one or more clients; a primary storage; and a tape storage, where the controller is programmed to process a backup and restore messages received from the one or more clients respectively to backup to the primary storage means data received from the clients and to restore to the clients data from the primary storage means. The system also performs a backup to the tape storage, in accordance with pre-defined criteria, of at least some of the data stored in the primary storage, and restores to the primary storage, in accordance with a respective restore message received from a client, at least some data stored in the tape storage. (See, e.g., Abstract and column 1, line 54, through column 2, line 53.) However, unlike the present invention, Gold et al. does not disclose that when a failure occurs at a first data center, an information processing apparatus is selected, from information processing apparatuses in a second data center, whose necessary recovery time including a time taken to input data still not backed up satisfies a predetermined requested recovery time. More particularly, Gold et al. does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above

described second feature of the present invention as recited in independent claim 7, and the above described third feature of the present invention as recited in independent claim 12, in combination with the other limitations recited in each of the independent claims.

U.S. Patent Publication No. 2003/0084372 (Mock et al.) discloses a method and system for backing up and recovering data in a database environment. The system includes a protection utility for compiled data in a computer system having dynamically configurable logical partitions that determines the time for rebuilding compiled data. The data is selectively stored in a form not requiring rebuild in order to meet a pre-specified recovery time limit. If the configuration changes, the protection strategy is migrated to adapt to the new configuration. The user specifies a maximum recovery time for the database indexes, and the protection utility automatically calculates the recovery time for each index. If the total recovery time is more than a specified maximum time, at least some of the indexes are logged to reduce the recovery time. (See, e.g., Abstract and paragraphs 15-19.) However, unlike the present invention, Saxon does not disclose that when a failure occurs at a first data center, an information processing apparatus is selected, from information processing apparatuses in a second data center, whose necessary recovery time including a time taken to input data still not backed up satisfies a predetermined requested recovery time. More particularly, Mock et al. does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in

independent claim 7, and the above described third feature of the present invention as recited in independent claim 12, in combination with the other limitations recited in each of the independent claims.

U.S. Patent Publication No. 2003/0225646 (Failla et al.) discloses a backup storage system for electronic securities trading that performs either an immediate system-level backup or a delayed manual takeover. In the interest of rapid recovery for virtually all failures, a degree of automatic processing is allowed, but in general, manual intervention is always an option. (See, e.g., Abstract and paragraph 38.) However, unlike the present invention, Failla et al. does not disclose that when a failure occurs at a first data center, an information processing apparatus is selected, from information processing apparatuses in a second data center, whose necessary recovery time including a time taken to input data still not backed up satisfies a predetermined requested recovery time. More particularly, Failla et al. does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 7, and the above described third feature of the present invention as recited in independent claim 12, in combination with the other limitations recited in each of the independent claims.

U.S. Patent Publication No. 2004/0078628 (Akamatu et al.) discloses a method and system in an operations management system for reorganizing an execution schedule of operations when a failure occurs in a storage device. The recovery time of a storage device where a failure occurs is determined, and

according to the recovery time, a schedule is produced for the operations that use the storage device where the failure occurred, and for the operations that do not use it. The system performs a calculation as to whether or not an operations management server can execute an operation within a certain period of time, and if it is not able to do so, then another operations management server is selected to perform the particular operation. (See, e.g., Abstract and paragraphs 6 and 37.) However, unlike the present invention, Akamatu et al. does not disclose that when a failure occurs at a first data center, an information processing apparatus is selected, from information processing apparatuses in a second data center, whose necessary recovery time including a time taken to input data still not backed up satisfies a predetermined requested recovery time. More particularly, Akamatu et al. does not disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 7, and the above described third feature of the present invention as recited in independent claim 12, in combination with the other limitations recited in each of the independent claims.

Therefore, since the references fail to disclose or suggest the above described first feature of the present invention as recited in independent claim 1, the above described second feature of the present invention as recited in independent claim 7, and the above described third feature of the present invention as recited in independent claim 12, in combination with the other

limitations recited in each of the independent claims, it is submitted that all of the claims are patentable over the cited references.

In view of the foregoing, Applicant requests that this Petition to Make Special be granted and that the application undergo the accelerated examination procedure set forth in MPEP 708.02 VIII.

Respectfully submitted,

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